



10051909 Sequence Listing.txt

SEQUENCE LISTING

<110> Helentjaris, Tim
<120> Plant Sugar Transport Proteins
<130> 2119-4263 (BB1163 US CIP)
<140> 10/051,909
<141> 2002-01-17
<160> 56
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Val Ala Met Phe Leu Ile Gly Ala Thr Val Ile Thr Thr Ser Pro Gly
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Pro Arg Ala Asp Cys Val Gly Arg Arg Pro Met Leu Val Ala Ser Ala
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Val Leu Tyr Phe Val Ser Gly Leu Val Met Leu Trp Ala Pro Ile Val
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115 120 125

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Gly Gly Met Phe Leu Ser Tyr Cys Met Val Phe Gly Met Ser Leu Met
145 150 155 160

Pro Lys Pro Asp Trp Arg Leu Met Leu Gly Val Leu Ser Ile Pro Ser
165 170 175

Leu Xaa Tyr Phe Gly Leu Thr Val Phe Tyr Leu Pro Glu Ser Pro Arg
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Trp Leu Val Ser Lys Gly Arg Met Ala Glu Ala Lys Arg Val Xaa Gln
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Arg Leu Arg Gly Arg Glu Asp Val Ser Xaa Glu Xaa Ala Leu Leu Val
210 215 220

Glu Gly Leu Gly Val Gly Lys Asp Thr Arg Ile Xaa Glu Tyr Ile Ile
225 230 235 240

Gly Pro Ala Thr Glu Ala Ala Asp Asp Leu Val Thr Asp Gly Asp Lys
245 250 255

Glu Gln Ile Thr Leu Tyr Gly Pro Glu Glu Gly Gln Ser Trp Ile Ala
260 265 270

Arg Pro Ser Lys Gly Pro Ile Met Leu Gly Ser Val Leu Ser Leu Ala
275 280 285

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Gly Ser Met Arg Ser Thr Leu Phe Pro Asn Phe Gly Ser Met Phe Ser
325 330 335

Val Thr Asp Gln His Ala Lys Asn Glu Gln Trp Asp Glu Glu Asn Leu
340 345 350

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355 360 365

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370 375 380

Glu Gly Lys Asp Ile Val His His Gly His Arg Gly Ser Ala Leu Ser
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Met Arg Arg Gln Ser Leu Leu Gly Glu Gly Gly Asp Gly Val Ser Ser
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Thr Asp Ile Gly Gly Gly Trp Gln Leu Ala Trp Lys Trp Ser Glu Lys
420 425 430

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Glu Gly Glu Asn Gly Arg Lys Glu Gly Gly Phe Lys Arg Val Tyr Leu
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500 505 510

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545 550 555 560

Val Ile Leu Ser Lys Phe Gly Leu Ser Ser Ala Ser Ala Ser Ile Leu
565 570 575

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Met Leu Leu Met Asp Leu Ser Gly Arg Arg Phe Leu Leu Leu Gly Thr
595 600 605

Ile Pro Ile Leu Ile Ala Ser Leu Val Ile Leu Val Val Ser Asn Leu
610 615 620

Ile Asp Leu Gly Thr Leu Ala His Ala Leu Leu Ser Thr Ile Ser Val
625 630 635 640

Ile Val Tyr Phe Cys Cys Phe Val Met Gly Phe Gly Pro Ile Pro Asn
645 650 655

Ile Leu Cys Ala Glu Ile Phe Pro Thr Arg Val Arg Gly Leu Cys Ile
660 665 670

Ala Ile Cys Ala Phe Thr Phe Trp Ile Gly Asp Ile Ile Val Thr Tyr
675 680 685

Ser Leu Pro Val Met Leu Asn Ala Ile Gly Leu Ala Gly Val Phe Ser
690 695 700

Ile Tyr Ala Val Val Cys Leu Ile Ser Phe Val Phe Val Phe Leu Lys
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10051909 Sequence Listing.txt

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His Leu Gly Val Pro Thr Ser Pro Ser Arg Phe Pro Ala Ala Ser Leu
35     40     45
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10051909 Sequence Listing.txt

Ile Gly Asn Leu Leu Gln Gly Trp Asp Asn Ala Thr Ile Ala Gly Ala
85 90 95

Val Leu Tyr Ile Lys Lys Glu Phe Asn Leu His Ser Asp Pro Leu Ile
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Thr Xaa Ser
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Val Met Gly Phe Gly Pro Ile Pro Asn Ile Leu Cys Ala Glu Ile Phe
35 40 45

Pro Thr Thr Val Arg Gly Ile Cys Ile Ala Ile Cys Ala Leu Thr Phe
50 55 60

Trp Ile Gly Asp Ile Ile Val Thr Tyr Thr Leu Pro Val Met Leu Asn
65 70 75 80

Ala Ile Gly Leu Ala Gly Val Phe Gly Ile Tyr Ala Val Val Cys Ile
85 90 95

Leu Ala Phe Leu Phe Val Phe Met Lys Val Pro Glu Thr Lys Gly Met
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115 120 125

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Lys Glu Asp
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c a a g g g t c a g t g a g c a a a g t g g t a g t a c a g g t a t t g g t g g t g g g c t g g c a a c t g g c a t g g 1440
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g a t g g a c a c c c a g t t g g g c c t g c a a t g g t t c a c c a t c t g a g a c a g c t t c a a a g g g g c c a 1680
a g t t g g a a a g c t c t t c t t g a a c c a g g g t t a a g c a t g c a t t g g t t g t g g a g t t g g a a t a 1740
c a a a t a c t t c a g c a g t t t t c a g g g a t a a a t g g g g t t c t a t a t t a c a c a c c t c a a a t c c t t 1800
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c c a a a c a t c c t t t g c t c a g a g a t t t t c c c c a c t a g g g t g c g t g g c c t c t g c a t t g c t a t c 2160
t g t g c a t t a g t g t t c t g g a t t g g a g a c a t c a t c a t c a c a t a c t c g t g c c t g t g a t g c t c 2220
g g c t c t t a g g a c t t g g t g g t g t a t t c g c c a t t t a c g c a g t t g t t t g t t c a t c t c g t g g 2280
a t a t t t g t g t t t t g a a g g t t c c a g a a a c a a a g g g c a t g c c c t t g a a g t c a t c t c t g a a 2340
t t c t t t t c t g t t g g a g c a a a g c a g g c t g c t c t g c c a a g a t g a g t g a c a c a c a a g t 2400
c c g t t a t a t a c t c t g t a a c t t a g t t g t t a a a g c c a t c a t c t c t c g t c t t a c a g a t t t t 2460
g c t t t t c a t a a g t t t a t t t g g a g a a g a t a t t t g a a a c a t a t g g g t t t t t t t c t t t c 2520
a t a a a a a t a a a a c c c t t c c c t t t t t g g g t g g g a a a a g a a a a a a a a a a a a a a a a a a 2580
a a a a a a a a a a a a a a a a a a

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<212> PRT
<213> Glycine max

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10051909 Sequence Listing.txt

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 20 25 30
 Lys Lys Asp Leu Ala Leu Gly Thr Thr Met Glu Arg Leu Val Val Gly
 35 40 45
 Met Ser Leu Ile Gly Ala Thr Val Ile Thr Thr Cys Ser Gly Pro Ile
 50 55 60
 Ala Asp Trp Leu Gly Arg Arg Pro Met Met Ile Ile Ser Ser Val Leu
 65 70 75 80
 Tyr Phe Leu Gly Gly Leu Val Met Leu Trp Ser Pro Asn Val Tyr Val
 85 90 95
 Leu Cys Leu Ala Arg Leu Leu Asp Gly Phe Gly Ile Gly Leu Ala Val
 100 105 110
 Thr Leu Val Pro Val Tyr Ile Ser Glu Thr Ala Pro Ser Glu Ile Arg
 115 120 125
 Gly Ser Leu Asn Thr Leu Pro Gln Phe Ser Gly Ser Gly Gly Met Phe
 130 135 140
 Leu Ser Tyr Cys Met Val Phe Gly Met Ser Leu Ser Pro Ala Pro Ser
 145 150 155 160
 Trp Arg Leu Met Leu Gly Val Leu Ser Ile Pro Ser Leu Leu Tyr Phe
 165 170 175
 Ala Leu Thr Ile Phe Phe Leu Pro Glu Ser Pro Arg Trp Leu Val Ser
 180 185 190
 Lys Gly Arg Met Leu Glu Ala Lys Lys Val Leu Gln Arg Leu Arg Gly
 195 200 205
 Arg Glu Asp Val Ser Gly Glu Met Ala Leu Leu Val Glu Gly Leu Gly
 210 215 220
 Ile Gly Gly Asp Thr Ser Ile Glu Glu Tyr Ile Ile Gly Pro Ala Asp
 225 230 235 240
 Asp Val Ala Asp Gly His Glu His Ala Thr Glu Lys Asp Lys Ile Arg
 245 250 255
 Leu Tyr Gly Ser Gln Ala Gly Leu Ser Trp Leu Ser Lys Pro Val Thr
 260 265 270
 Gly Gln Ser Ser Ile Gly Leu Ala Ser His His Gly Ser Ile Ile Asn
 275 280 285
 Gln Ser Met Pro Leu Met Asp Pro Leu Val Thr Leu Phe Gly Ser Ile
 290 295 300
 His Glu Lys Leu Pro Glu Thr Gly Ala Arg Gly Ser Met Arg Ser Thr
 305 310 315 320
 Leu Phe Pro Asn Phe Gly Ser Met Phe Ser Thr Ala Glu Pro His Ala
 325 330 335
 Lys Ile Glu Gln Trp Asp Glu Glu Ser Leu Gln Arg Glu Arg Glu Asp
 340 345 350

10051909 Sequence Listing.txt

Tyr Met Ser Asp Ala Thr Arg Gly Asp Ser Asp Asp Asn Leu His Ser
 355 360 365
 Pro Leu Ile Ser Arg Gln Thr Thr Ser Leu Glu Lys Asp Leu Pro Pro
 370 375 380
 Pro Pro Ser His Gly Ser Ile Leu Gly Ser Met Arg Arg His Ser Ser
 385 390 395 400
 Leu Met Gln Gly Ser Gly Glu Gln Gly Gly Ser Thr Gly Ile Gly Gly
 405 410 415
 Gly Trp Gln Leu Ala Trp Lys Trp Thr Asp Lys Gly Glu Asp Gly Lys
 420 425 430
 Gln Gln Gly Gly Phe Lys Arg Ile Tyr Leu His Glu Glu Gly Val Ser
 435 440 445
 Ala Ser Arg Arg Gly Ser Ile Val Ser Ile Pro Gly Glu Gly Glu Phe
 450 455 460
 Val Gln Ala Ala Ala Leu Val Ser Gln Pro Ala Leu Tyr Ser Lys Glu
 465 470 475 480
 Leu Ile Asp Gly His Pro Val Gly Pro Ala Met Val His Pro Ser Glu
 485 490 495
 Thr Ala Ser Lys Gly Pro Ser Trp Lys Ala Leu Leu Glu Pro Gly Val
 500 505 510
 Lys His Ala Leu Val Val Gly Val Gly Ile Gln Ile Leu Gln Gln Phe
 515 520 525
 Ser Gly Ile Asn Gly Val Leu Tyr Tyr Thr Pro Gln Ile Leu Glu Glu
 530 535 540
 Ala Gly Val Glu Val Leu Leu Ser Asp Ile Gly Ile Gly Ser Glu Ser
 545 550 555 560
 Ala Ser Phe Leu Ile Ser Ala Phe Thr Thr Phe Leu Met Leu Pro Cys
 565 570 575
 Ile Gly Val Ala Met Lys Leu Met Asp Val Ser Gly Arg Arg Gln Leu
 580 585 590
 Leu Leu Thr Thr Ile Pro Val Leu Ile Val Ser Leu Ile Ile Leu Val
 595 600 605
 Ile Gly Ser Leu Val Asn Phe Gly Asn Val Ala His Ala Ala Ile Ser
 610 615 620
 Thr Val Cys Val Val Val Tyr Phe Cys Cys Phe Val Met Gly Tyr Gly
 625 630 635 640
 Pro Ile Pro Asn Ile Leu Cys Ser Glu Ile Phe Pro Thr Arg Val Arg
 645 650 655
 Gly Leu Cys Ile Ala Ile Cys Ala Leu Val Phe Trp Ile Gly Asp Ile
 660 665 670
 Ile Ile Thr Tyr Ser Leu Pro Val Met Leu Gly Ser Leu Gly Leu Gly
 675 680 685

10051909 Sequence Listing.txt

Gly Val Phe Ala Ile Tyr Ala Val Val Cys Phe Ile Ser Trp Ile Phe
690 695 700

Val Phe Leu Lys Val Pro Glu Thr Lys Gly Met Pro Leu Glu Val Ile
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Ser Glu Phe Phe Ser Val Gly Ala Lys Gln Ala Ala Ser Ala Lys Asn
725 730 735

Glu

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<212> DNA
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gaagcatggc aaatccaagc agtctagtgg accctctagt gaccctcttt ggtagtgtag 180
atgagaagct cccagaaaaca ggaagcacc tttttccaca ctttgggagt atgttcagtg 240
ttgggggaaa tcagccaagg aatgaagatt gggatgagga aagcctagcc agagaggggtg 300
atgattatgt ctctgatgct ggtgattctg atgacaattt gcagagtcca ttgatctcac 360
gtcaacaac gagtctggat aaggacatac ctctcatgc ccatagtaac cttgcaagca 420
tgaggcaagg tagtctttta catggaaatt caggagaacc cactggtagt actgggattg 480
gtggtggttg gcagctagca tggaaatggt ctgaaagaga gggcccagat ggaaagaagg 540
aaggtggctt caagagaata tatttacacc aagatggtgg ttctggatct agacgtgggt 600
ctgtggtttc actccctggc ggtgatttac caactgacag tgaggttgta caggctgctg 660
ctctggtgag tcagcctgcc ctttataatg aggaccttat gcgtcaacgg ccagttggac 720
cagctatgat tcatccctct gaaacaattg caaaagggcc aagttggagt gatctttttg 780
aacctggggt gaagcatgca ttgattgtgg ggggtgggaat gcaaattctt cagcagttct 840
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caacctgtgt gatgttcct tgtatagcca ttgccatgag gctcatggat atttcaggca 1020
gaaggacttt gctgctcagt acaatccccg tcctaataagc agctcttctc atattagtcc 1080
tggaagtct tgtggatttg ggtccactg caaatgcatc aatctcaacc attagtgtta 1140
ttgtctatct ctgtttcttt gtcattggat ttggaccaat tcctaataata ctttgtgcag 1200
agatcttccc cactcgagtt cgtggtctct gcattgctat ttgtgccctt accttttggg 1260
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ttccagaaac caagggcatg ccactggaag tgcatttga gttcttctct gtcggagcaa 1440
aacagtttga cgaatgcaag cacaactgac ccaaggacat gataaattca aagttttgac 1500
ggtaccttct aattattttc aatctacggc tgtttgaaat tttcccctct tttaaaattt 1560
tattttctat ttattctctc ttttccgtgg gttgagattg agaaacaaga aactttgttt 1620
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aaaaaaaaaa aa 1692

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<213> Glycine max

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Gly Gln Ser Trp Val Ala Arg Pro Val Ala Gly Pro Asn Ser Val Gly
20 25 30

Leu Val Ser Arg Lys Gly Ser Met Ala Asn Pro Ser Ser Leu Val Asp
35 40 45

10051909 Sequence Listing.txt

Pro Leu Val Thr Leu Phe Gly Ser Val His Glu Lys Leu Pro Glu Thr
50 55 60
Gly Ser Thr Leu Phe Pro His Phe Gly Ser Met Phe Ser Val Gly Gly
65 70 75 80
Asn Gln Pro Arg Asn Glu Asp Trp Asp Glu Glu Ser Leu Ala Arg Glu
85 90 95
Gly Asp Asp Tyr Val Ser Asp Ala Gly Asp Ser Asp Asp Asn Leu Gln
100 105 110
Ser Pro Leu Ile Ser Arg Gln Thr Thr Ser Leu Asp Lys Asp Ile Pro
115 120 125
Pro His Ala His Ser Asn Leu Ala Ser Met Arg Gln Gly Ser Leu Leu
130 135 140
His Gly Asn Ser Gly Glu Pro Thr Gly Ser Thr Gly Ile Gly Gly Gly
145 150 155 160
Trp Gln Leu Ala Trp Lys Trp Ser Glu Arg Glu Gly Pro Asp Gly Lys
165 170 175
Lys Glu Gly Gly Phe Lys Arg Ile Tyr Leu His Gln Asp Gly Gly Ser
180 185 190
Gly Ser Arg Arg Gly Ser Val Val Ser Leu Pro Gly Gly Asp Leu Pro
195 200 205
Thr Asp Ser Glu Val Val Gln Ala Ala Ala Leu Val Ser Gln Pro Ala
210 215 220
Leu Tyr Asn Glu Asp Leu Met Arg Gln Arg Pro Val Gly Pro Ala Met
225 230 235 240
Ile His Pro Ser Glu Thr Ile Ala Lys Gly Pro Ser Trp Ser Asp Leu
245 250 255
Phe Glu Pro Gly Val Lys His Ala Leu Ile Val Gly Val Gly Met Gln
260 265 270
Ile Leu Gln Gln Phe Ser Gly Ile Asn Gly Val Leu Tyr Tyr Thr Pro
275 280 285
Gln Ile Leu Glu Gln Ala Gly Val Gly Tyr Leu Leu Ser Ser Leu Gly
290 295 300
Leu Gly Ser Thr Ser Ser Ser Phe Leu Ile Ser Ala Val Thr Thr Leu
305 310 315 320
Leu Met Leu Pro Cys Ile Ala Ile Ala Met Arg Leu Met Asp Ile Ser
325 330 335
Gly Arg Arg Thr Leu Leu Leu Ser Thr Ile Pro Val Leu Ile Ala Ala
340 345 350
Leu Leu Ile Leu Val Leu Gly Ser Leu Val Asp Leu Gly Ser Thr Ala
355 360 365
Asn Ala Ser Ile Ser Thr Ile Ser Val Ile Val Tyr Phe Cys Phe Phe
370 375 380

10051909 Sequence Listing.txt

Val Met Gly Phe Gly Pro Ile Pro Asn Ile Leu Cys Ala Glu Ile Phe
 385 390 395 400
 Pro Thr Arg Val Arg Gly Leu Cys Ile Ala Ile Cys Ala Leu Thr Phe
 405 410 415
 Trp Ile Cys Asp Ile Ile Val Thr Tyr Thr Leu Pro Val Met Leu Asn
 420 425 430
 Ser Val Gly Leu Ala Gly Val Phe Gly Ile Tyr Ala Val Val Cys Phe
 435 440 445
 Ile Ala Trp Val Phe Val Phe Leu Lys Val Pro Glu Thr Lys Gly Met
 450 455 460
 Pro Leu Glu Val Ile Ile Glu Phe Phe Ser Val Gly Ala Lys Gln Phe
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<220>
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10051909 Sequence Listing.txt

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gcttctccat	ctcatctcct	tggttggttc	tctactagag	aggcgcagct	gcagggatcc	180
ttggtggaga	ggaggggaaga	agatgtcggg	tgctgcactg	gtcgcgattg	cggcttccat	240
tggcaatctg	ctgcaggggt	gggacaatgc	caccatcgct	ggtgctgttc	tgtacatcaa	300
gaaggaattc	cagctcgaaa	ataatccgac	tgtggagggg	ctcatcgtgg	catgtcctca	360
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gcncggaac	ctntcaangg	ttggaacgtt				510

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 <213> Triticum aestivum

<400> 12
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 Arg Arg Leu Arg Ser Val Leu Ile Tyr Arg Thr Thr Pro Pro His His
 20 25 30
 Thr Arg Gly Leu Pro Leu Leu Gly Leu Leu His Leu Ile Ser Leu Val
 35 40 45
 Gly Ser Leu Leu Glu Arg Arg Ser Cys Arg Asp Pro Trp Trp Arg Gly
 50 55 60
 Gly Lys Lys Met Ser Gly Ala Ala Leu Val Ala Ile Ala Ala Ser Ile
 65 70 75 80
 Gly Asn Leu Leu Gln Gly Trp Asp Asn Ala Thr Ile Ala Gly Ala Val
 85 90 95
 Leu Tyr Ile Lys Lys Glu Phe Gln Leu Glu Asn Asn Pro Thr Val Glu
 100 105 110
 Gly Leu Ile Val Ala
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<210> 13
 <211> 1487
 <212> DNA
 <213> Triticum aestivum

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tgattcatcc	attggaggca
gtgtgaggcg	tgcattgttc
taaatggagt	tctctactat
tttccaatct	tggcctcagt
tactcatgct	cccaagcatt
ttctgctact	gggcacaatt
atgttatcaa	cttgagtacg
acttctgctg	ctttgtcatg
tccccaccag	agtccgtggt
acattattgt	tacctacagc
ttgggtatata	tgcagtcgtt
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gagggcagtc	gcagcactgg
aggatggcaa	gaaggaagga
actcaagaag	gggctctgtt
gtgggtttat	acatgctgct
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gaattcagat	gcttcagcag
agctggtgtg	gctgttcttc
gatcagttct	ctcaccacct
ggatataatct	ggaagaaggt
aattgttttg	ggtgtggtca
cacagtttagc	gtcattgtct
cattctatgt	gcagagattt
cctcacattc	tggatttgtg
tattgggtcta	gcgggtgtct
cgtctaccta	aagggtccag
tgcggttggg	gcgaagcaag

10051909 Sequence Listing.txt

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tagttgctgt agggttgttc aacttgctaa tctgattctg aactaccatg ctgatgtccg 1320
aaataaagaa aaagcatgtt tttttttgtg tcaacttgca aactttcttt taaacattgt 1380
gcaatgtatt gtaaatttct ttatcaactt ccctcgattc agagagaagc acttgtttgt 1440
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 <211> 345
 <212> PRT
 <213> Triticum aestivum

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 20 25 30
 Lys Lys Glu Gly Gly Phe Lys Arg Ile Tyr Leu His Gln Glu Gly Val
 35 40 45
 Ala Asp Ser Arg Arg Gly Ser Val Val Ser Leu Pro Gly Gly Gly Asp
 50 55 60
 Ala Thr Gln Gly Gly Ser Gly Phe Ile His Ala Ala Ala Leu Val Ser
 65 70 75 80
 His Ser Ala Leu Tyr Ser Lys Asp Leu Met Glu Glu Arg Met Ala Ala
 85 90 95
 Gly Pro Ala Met Ile His Pro Leu Glu Ala Ala Pro Lys Gly Ser Ile
 100 105 110
 Trp Lys Asp Leu Phe Glu Pro Gly Val Arg Arg Ala Leu Phe Val Gly
 115 120 125
 Val Gly Ile Gln Met Leu Gln Gln Phe Ala Gly Ile Asn Gly Val Leu
 130 135 140
 Tyr Tyr Thr Pro Gln Ile Leu Glu Gln Ala Gly Val Ala Val Leu Leu
 145 150 155 160
 Ser Asn Leu Gly Leu Ser Ser Ala Ser Ala Ser Ile Leu Ile Ser Ser
 165 170 175
 Leu Thr Thr Leu Leu Met Leu Pro Ser Ile Gly Val Ala Met Arg Leu
 180 185 190
 Met Asp Ile Ser Gly Arg Arg Phe Leu Leu Leu Gly Thr Ile Pro Ile
 195 200 205
 Leu Ile Ala Ser Leu Ile Val Leu Gly Val Val Asn Val Ile Asn Leu
 210 215 220
 Ser Thr Val Pro His Ala Val Leu Ser Thr Val Ser Val Ile Val Tyr
 225 230 235 240
 Phe Cys Cys Phe Val Met Gly Phe Gly Pro Ile Pro Asn Ile Leu Cys
 245 250 255

10051909 Sequence Listing.txt

Ala Glu Ile Phe Pro Thr Arg Val Arg Gly Val Cys Ile Ala Ile Cys
 260 265 270

Ala Leu Thr Phe Trp Ile Cys Asp Ile Ile Val Thr Tyr Ser Leu Pro
 275 280 285

Val Met Leu Asn Ala Ile Gly Leu Ala Gly Val Phe Gly Ile Tyr Ala
 290 295 300

Val Val Cys Cys Ile Ala Phe Val Phe Val Tyr Leu Lys Val Pro Glu
 305 310 315 320

Thr Lys Gly Met Pro Leu Glu Val Ile Thr Glu Phe Phe Ala Val Gly
 325 330 335

Ala Lys Gln Ala Gln Ala Thr Ile Ala
 340 345

<210> 15
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ggccggcctt	tggaagttagg	atatgtactt	agatcatctg	ctcttttcgc	tttggaactt	900
tctatttggt	ttattcagaa	tttcttgccc	atgtaactag	tgctgttatc	acaatttatg	960
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 <212> PRT
 <213> Triticum aestivum

<400> 16

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Ile Leu Glu Gln Ala Gly Val Gly Val Leu Leu Ser Asn Ile Gly Leu
 35 40 45

Ser Ser Ser Ser Ala Ser Ile Leu Ile Ser Ala Leu Thr Thr Leu Leu
 50 55 60

Met Leu Pro Ser Ile Gly Ile Ala Met Arg Leu Met Asp Met Ser Gly
 65 70 75 80

10051909 Sequence Listing.txt

Arg Arg Phe Leu Leu Leu Ser Thr Ile Pro Val Leu Ile Val Ala Leu
85 90 95
Ala Val Leu Val Leu Val Asn Val Leu Asp Val Gly Thr Met Val His
100 105 110
Ala Ala Leu Ser Thr Ile Ser Val Ile Val Tyr Phe Cys Phe Phe Val
115 120 125
Met Gly Phe Gly Pro Ile Pro Asn Ile Leu Cys Ala Glu Ile Phe Pro
130 135 140
Thr Ser Val Arg Gly Ile Cys Ile Ala Ile Cys Ala Leu Thr Phe Trp
145 150 155 160
Ile Gly Asp Ile Ile Val Thr Tyr Thr Leu Pro Val Met Leu Asn Ala
165 170 175
Ile Gly Leu Ala Gly Val Phe Gly Ile Tyr Ala Ile Val Cys Val Leu
180 185 190
Ala Phe Val Phe Val Tyr Met Lys Val Pro Glu Thr Lys Gly Met Pro
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Glu Ala Thr Asp
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<212> DNA
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10051909 Sequence Listing.txt

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<222> (599)

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aggcaacgtc	aagttcgcc	tcgcctgcnc	catcctcgcc	tcaatgacct	ccatccttct	180
cggctatgat	atcggagtga	tgagcggcgc	gtcgttgtag	atcaagaagg	acctgaaaaat	240
cagcgacgtg	aagctggaga	tcctgatggg	nacctcaac	gtgtactcgc	tcatcggctc	300
gttingcggca	gggaggacgt	ccgactggat	cggncgccgt	acaccatcgt	gttcgcngcg	360
gtgatcttct	tcgcgggcgc	ttcctcatgg	gcttcgccgt	gaactactgg	atgctcatgt	420
tcggggcgctt	cgtggccggg	atcggcggtg	gctacgcgct	catgatcgca	accgnttaca	480
cggccgaagt	gtccccgcat	cggcccgcg	cttcctgacg	tcgttcccgg	agggtgttcat	540
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<211> 167

<212> PRT

<213> Zea mays

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<222> (85)

<223> Xaa = any amino acid

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<222> (98)

<223> Xaa = any amino acid

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<223> Xaa = any amino acid

<400> 18

Ser	Arg	Ala	Gln	Ser	Glu	Pro	Ser	Thr	Met	Ala	Ser	Ala	Pro	Leu	Pro
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Ala	Ala	Ile	Glu	Pro	Gly	Lys	Lys	Gly	Asn	Val	Lys	Phe	Ala	Phe	Ala
			20					25					30		

Cys	Xaa	Ile	Leu	Ala	Ser	Met	Thr	Ser	Ile	Leu	Leu	Gly	Tyr	Asp	Ile
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

10051909 Sequence Listing.txt

35

40

45

Gly Val Met Ser Gly Ala Ser Leu Tyr Ile Lys Lys Asp Leu Lys Ile
50 55 60
Ser Asp Val Lys Leu Glu Ile Leu Met Gly Ile Leu Asn Val Tyr Ser
65 70 75 80
Leu Ile Gly Ser Xaa Ala Ala Gly Arg Thr Ser Asp Trp Ile Gly Arg
85 90 95
Arg Xaa Thr Ile Val Phe Ala Ala Val Ile Phe Phe Ala Gly Ala Xaa
100 105 110
Leu Met Gly Phe Ala Val Asn Tyr Trp Met Leu Met Phe Gly Arg Phe
115 120 125
Val Ala Gly Ile Gly Val Gly Tyr Ala Leu Met Ile Ala Thr Val Tyr
130 135 140
Thr Ala Glu Val Ser Pro Xaa Ser Ala Arg Gly Phe Leu Thr Ser Phe
145 150 155 160
Pro Glu Val Phe Ile Thr Ser
165

<210> 19
<211> 1914
<212> DNA
<213> Zea mays

<400> 19
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cataatgtgcc atcctggcct ccatggcctc tgatcatcctt ggctatgaca ttgggggtgat 180
gagtgaggcg gccatgtaca tcaagaagga cctgaatatc acggacgtgc agctggagat 240
cctgatcggg atcctcagtc tctactcgct gttcggatcc ttcgctggcg cgcgacgtc 300
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gattccgaag ggcctcgacg gggacgtagt caccgtaccc ggcaaggagc aaggcggcgg 840
tgagttgcag gtgtggaaga agctcatcct gtccccgacc ccggtgtgcc gacgcatact 900
gctctcggcc gtgggtctcc acttcttcca gcaggcttct ggtagcgact ccgtcgtcca 960
gtacagcgcc cgcctgttca agagcgcggg gatcaccgac gacaacaagc tcctgggcgt 1020
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ccgcgcgggg cgtcgccctc tgctgctgat cagcacgggc gggatgattg tctcgtcat 1140
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gggcaagctg ttcgcatgc cagacacggg catggctgaa gaagcagaag acgccgcagc 1560
caaggagaag gtggtggaac tgcctagcag caagtaggtg gctatcccag agcacaggctc 1620
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aagactgccc tatgaggtgt cgtgggttcaa ccagagatca ttctgctcct tttcttttcc 1740
cttctttttt cgagtaccat tcccattcgt cgtgggtcagt acgatgttgg gtcgttggga 1800
gttagtggtg tcagagtccg cgtgtgcttt gcaagccagg gctgaacca caatcatcag 1860

10051909 Sequence Listing.txt

1914

taacaaaaat tcttccgttt gctttgcaag ccaaaaaaaaaa aaaaaaaaaa aaaa

<210> 20
 <211> 513
 <212> PRT
 <213> Zea mays

<400> 20
 Met Ala Ser Asp Glu₅ Leu Ala Lys Ala Val₁₀ Glu Pro Arg Lys Lys₁₅ Gly
 1
 Asn Val Lys Tyr₂₀ Ala Ser Ile Cys₂₅ Ala Ile Leu Ala Ser Met₃₀ Ala Ser
 Val Ile Leu₃₅ Gly Tyr Asp Ile Gly₄₀ Val Met Ser Gly₄₅ Ala Ala Met Tyr
 Ile Lys₅₀ Lys Asp Leu Asn Ile₅₅ Thr Asp Val Gln Leu₆₀ Glu Ile Leu Ile
 Gly Ile Leu Ser Leu₇₀ Tyr Ser Leu Phe Gly₇₅ Ser Phe Ala Gly Ala Arg₈₀
 Thr Ser Asp Arg Ile₈₅ Gly Arg Arg Leu Thr₉₀ Val Val Phe Ala Ala Val₉₅
 Ile Phe Phe Val₁₀₀ Gly Ser Leu Leu₁₀₅ Met Gly Phe Ala Val₁₁₀ Asn Tyr Gly
 Met Leu Met₁₁₅ Ala Gly Arg Phe Val₁₂₀ Ala Gly Val Gly₁₂₅ Val Gly Tyr Gly
 Gly Met₁₃₀ Ile Ala Pro Val Tyr₁₃₅ Thr Ala Glu Ile Ser₁₄₀ Pro Ala Ala Ser
 Arg Gly Phe Leu Thr Thr₁₅₀ Phe Pro Glu Val Phe₁₅₅ Ile Asn Ile Gly Ile₁₆₀
 Leu Leu Gly Tyr Leu₁₆₅ Ser Asn Phe Ala Phe₁₇₀ Ala Arg Leu Pro Leu His₁₇₅
 Leu Gly Trp Arg₁₈₀ Val Met Leu Ala Ile₁₈₅ Gly Ala Val Pro Ser₁₉₀ Gly Leu
 Leu Ala Leu₁₉₅ Leu Val Phe Cys Met₂₀₀ Pro Glu Ser Pro Arg₂₀₅ Trp Leu Val
 Leu Lys₂₁₀ Gly Arg Leu Ala Asp₂₁₅ Ala Arg Ala Val Leu₂₂₀ Glu Lys Thr Ser
 Ala Thr Pro Glu Glu Ala₂₃₀ Ala Glu Arg Leu Ala₂₃₅ Asp Ile Lys Ala Ala₂₄₀
 Ala Gly Ile Pro Lys₂₄₅ Gly Leu Asp Gly₂₅₀ Val Val Thr Val Pro Gly₂₅₅
 Lys Glu Gln Gly₂₆₀ Gly Gly Glu Leu Gln₂₆₅ Val Trp Lys Lys Leu₂₇₀ Ile Leu
 Ser Pro Thr₂₇₅ Pro Ala Val Arg Arg₂₈₀ Ile Leu Leu Ser Ala₂₈₅ Val Gly Leu
 His Phe Phe Gln Gln Ala Ser Gly Ser Asp Ser Val Val Gln Tyr Ser
 Page 20

10051909 Sequence Listing.txt

290

295

300

Ala Arg Leu Phe Lys Ser Ala Gly Ile Thr Asp Asp Asn Lys Leu Leu
 305 310 315 320
 Gly Val Thr Cys Ala Val Gly Val Thr Lys Thr Phe Phe Ile Leu Val
 325 330 335
 Ala Thr Phe Leu Leu Asp Arg Ala Gly Arg Arg Pro Leu Leu Leu Ile
 340 345 350
 Ser Thr Gly Gly Met Ile Val Ser Leu Ile Cys Leu Gly Ser Gly Leu
 355 360 365
 Thr Val Ala Gly His His Pro Asp Thr Lys Val Ala Trp Ala Val Ala
 370 375 380
 Leu Cys Ile Ala Ser Thr Leu Ser Tyr Ile Ala Phe Phe Ser Ile Gly
 385 390 395 400
 Leu Gly Pro Ile Thr Gly Val Tyr Thr Ser Glu Ile Phe Pro Leu Gln
 405 410 415
 Val Arg Ala Leu Gly Phe Ala Val Gly Val Ala Ser Asn Arg Val Thr
 420 425 430
 Ser Ala Val Ile Ser Met Thr Phe Leu Ser Leu Ser Lys Ala Ile Thr
 435 440 445
 Ile Gly Gly Ser Phe Phe Leu Tyr Ser Gly Ile Ala Ala Val Ala Trp
 450 455 460
 Val Phe Phe Phe Thr Cys Leu Pro Glu Thr Arg Gly Arg Thr Leu Glu
 465 470 475 480
 Glu Met Gly Lys Leu Phe Gly Met Pro Asp Thr Gly Met Ala Glu Glu
 485 490 495
 Ala Glu Asp Ala Ala Ala Lys Glu Lys Val Val Glu Leu Pro Ser Ser
 500 505 510

Lys

<210> 21
 <211> 2017
 <212> DNA
 <213> Oryza sativa

<400> 21
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 ccatgacctc catcctcctc ggctacgata tcgggggtgat gagcggggcg tcgctgtaca 240
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 tcaactacgc catgctcatg ttcggccgct tcgtggccgg catcggcggt ggctacgcgc 480
 tcatgatcgc gccggtgtac accgccgagg tgtcgccggc gtcggcgcggt ggcttcctga 540
 cgtcgttccc ggagggtgtc atcaacttcg gcatcctgct cgggtacgtc tcgaactatg 600
 ctttctccc cttgccgctg aacctcgggt ggcgcacatc gctcggcatc ggcgcggcgc 660
 cgtccgtgct gctcgcgctc atggtgctcg gcatgccgga gtcgccgcgg tggctgggtca 720
 tgaaggagac cctcgcggac gccaaagggtg tgctggagaa gacctccgac acggcggagg 780

10051909 Sequence Listing.txt

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tcatcctgtc cccgaccccc gccatgcggc gcatcctgct gtccgggagc ggcattccact 960
tcttccagca tgcgttgggc attcactccg tcgtcttcta cagccctctc gtgttcaaga 1020
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gcgtcaccag cggcgtcatc tccatgacct tcctgtcgct gtccaaggcc atcaccatcg 1440
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acctcccgga gacccgcggc cggacgctgg aggagatgag caagctgttc ggcgacacgg 1560
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa 2017

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<210> 22
 <211> 510
 <212> PRT
 <213> Oryza sativa

<220>
 <221> UNSURE
 <222> (102)
 <223> Xaa = any amino acid

<400> 22
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 Asn Val Arg Phe Ala Phe Ala Cys Ala Ile Leu Ala Ser Met Thr Ser
 20 25 30
 Ile Leu Leu Gly Tyr Asp Ile Gly Val Met Ser Gly Ala Ser Leu Tyr
 35 40 45
 Ile Lys Lys Asp Phe Asn Ile Ser Asp Gly Lys Val Glu Val Leu Met
 50 55 60
 Gly Ile Leu Asn Leu Tyr Ser Leu Ile Gly Ser Phe Ala Ala Gly Arg
 65 70 75 80
 Thr Ser Asp Trp Ile Gly Arg Arg Tyr Thr Ile Val Phe Ala Ala Val
 85 90 95
 Ile Phe Phe Ala Gly Xaa Phe Leu Met Gly Phe Ala Val Asn Tyr Ala
 100 105 110
 Met Leu Met Phe Gly Arg Phe Val Ala Gly Ile Gly Val Gly Tyr Ala
 115 120 125
 Leu Met Ile Ala Pro Val Tyr Thr Ala Glu Val Ser Pro Ala Ser Ala
 130 135 140
 Arg Gly Phe Leu Thr Ser Phe Pro Glu Val Phe Ile Asn Phe Gly Ile
 145 150 155 160

10051909 Sequence Listing.txt

Leu Leu Gly Tyr Val Ser Asn Tyr Ala Phe Ser Arg Leu Pro Leu Asn
 165 170 175
 Leu Gly Trp Arg Ile Met Leu Gly Ile Gly Ala Ala Pro Ser Val Leu
 180 185 190
 Leu Ala Leu Met Val Leu Gly Met Pro Glu Ser Pro Arg Trp Leu Val
 195 200 205
 Met Lys Gly Arg Leu Ala Asp Ala Lys Val Val Leu Glu Lys Thr Ser
 210 215 220
 Asp Thr Ala Glu Glu Ala Ala Glu Arg Leu Ala Asp Ile Lys Ala Ala
 225 230 235 240
 Ala Gly Ile Pro Glu Glu Leu Asp Gly Asp Val Val Thr Val Pro Lys
 245 250 255
 Arg Gly Ser Gly Asn Glu Lys Arg Val Trp Lys Glu Leu Ile Leu Ser
 260 265 270
 Pro Thr Pro Ala Met Arg Arg Ile Leu Leu Ser Gly Ile Gly Ile His
 275 280 285
 Phe Phe Gln His Ala Leu Gly Ile His Ser Val Val Phe Tyr Ser Pro
 290 295 300
 Leu Val Phe Lys Ser Pro Gly Leu Thr Asn Asp Lys His Phe Leu Gly
 305 310 315 320
 Thr Thr Trp Pro Phe Gly Val Thr Lys Arg Leu Phe Ile Leu Leu Ala
 325 330 335
 Thr Phe Phe Ile Asp Gly Val Gly Arg Arg Pro Leu Leu Leu Gly Ser
 340 345 350
 Thr Gly Gly Ile Ile Leu Ser Leu Ile Gly Leu Gly Ala Gly Leu Thr
 355 360 365
 Val Val Gly Gln His Pro Asp Ala Lys Ile Pro Trp Ala Ile Gly Leu
 370 375 380
 Ser Ile Ala Ser Thr Leu Ala Tyr Val Ala Phe Phe Ser Ile Gly Leu
 385 390 395 400
 Gly Pro Ile Thr Trp Val Tyr Ser Ser Glu Ile Phe Pro Leu Gln Val
 405 410 415
 Arg Ala Leu Gly Cys Ser Leu Gly Val Ala Ala Asn Arg Val Thr Ser
 420 425 430
 Gly Val Ile Ser Met Thr Phe Leu Ser Leu Ser Lys Ala Ile Thr Ile
 435 440 445
 Gly Gly Ser Phe Phe Leu Tyr Ser Gly Ile Ala Ala Leu Ala Trp Val
 450 455 460
 Phe Phe Tyr Thr Tyr Leu Pro Glu Thr Arg Gly Arg Thr Leu Glu Glu
 465 470 475 480
 Met Ser Lys Leu Phe Gly Asp Thr Ala Ala Ala Ser Glu Ser Asp Glu
 485 490 495

10051909 Sequence Listing.txt

Pro Ala Lys Glu Lys Lys Lys Val Glu Met Ala Ala Thr Asn
500 505 510

<210> 23
<211> 1853
<212> DNA
<213> Glycine max

<400> 23
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gctagttgaa gctgcagaag ctcataagac acttcaggat ttcgatcctc caaagaagcg 240
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cgaagacatg gaagggtctt ttggtacttt taggtccaaa tccaacgcca gcaaggctgt 1680
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aatgagtatt gggacatcca gtaatagtga agtaatttcg tgattttttt tttgtttttt 1800
actttttaga ctagtcttc aaatcaaaac gagaagttaa agtgaaaaaa aaa 1853

<210> 24
<211> 523
<212> PRT
<213> Glycine max

<400> 24
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20 25 30
Ala Cys Ala Met Leu Ala Ser Met Thr Ser Ile Leu Leu Gly Tyr Asp
35 40 45
Ile Gly Val Met Ser Gly Ala Ala Ile Tyr Ile Lys Arg Asp Leu Lys
50 55 60
Val Ser Asp Glu Gln Ile Glu Ile Leu Leu Gly Ile Ile Asn Leu Tyr
65 70 75 80
Ser Leu Ile Gly Ser Cys Leu Ala Gly Arg Thr Ser Asp Trp Ile Gly

10051909 Sequence Listing.txt

85

90

95

Pro Arg Tyr Thr Ile Val Phe Ala Gly Thr Ile Phe Phe Val Gly Ala
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 115 120 125
 Phe Val Ala Gly Ile Gly Ile Gly Tyr Ala Leu Met Ile Ala Pro Val
 130 135 140
 Tyr Thr Ala Glu Val Ser Pro Ala Ser Ser Arg Gly Phe Leu Thr Ser
 145 150 155 160
 Phe Pro Glu Val Phe Ile Asn Gly Gly Ile Leu Ile Gly Tyr Ile Ser
 165 170 175
 Asn Tyr Ala Phe Ser Lys Leu Thr Leu Lys Val Gly Trp Arg Met Met
 180 185 190
 Leu Gly Val Gly Ala Ile Pro Ser Val Leu Leu Thr Val Gly Val Leu
 195 200 205
 Ala Met Pro Glu Ser Pro Arg Trp Leu Val Met Arg Gly Arg Leu Gly
 210 215 220
 Glu Ala Arg Lys Val Leu Asn Lys Thr Ser Asp Ser Lys Glu Glu Ala
 225 230 235 240
 Gln Leu Arg Leu Ala Glu Ile Lys Gln Ala Ala Gly Ile Pro Glu Ser
 245 250 255
 Cys Asn Asp Asp Val Val Gln Val Asn Lys Gln Ser Asn Gly Glu Gly
 260 265 270
 Val Trp Lys Glu Leu Phe Leu Tyr Pro Thr Pro Ala Ile Arg His Ile
 275 280 285
 Val Ile Ala Ala Leu Gly Ile His Phe Phe Gln Gln Ala Ser Gly Val
 290 295 300
 Asp Ala Val Val Leu Tyr Ser Pro Arg Ile Phe Glu Lys Ala Gly Ile
 305 310 315 320
 Thr Asn Asp Thr His Lys Leu Leu Ala Thr Val Ala Val Gly Phe Val
 325 330 335
 Lys Thr Val Phe Ile Leu Ala Ala Thr Phe Thr Leu Asp Arg Val Gly
 340 345 350
 Arg Arg Pro Leu Leu Leu Ser Ser Val Gly Gly Met Val Leu Ser Leu
 355 360 365
 Leu Thr Leu Ala Ile Ser Leu Thr Val Ile Asp His Ser Glu Arg Lys
 370 375 380
 Leu Met Trp Ala Val Gly Ser Ser Ile Ala Met Val Leu Ala Tyr Val
 385 390 395 400
 Ala Thr Phe Ser Ile Gly Ala Gly Pro Ile Thr Trp Val Tyr Ser Ser
 405 410 415
 Glu Ile Phe Pro Leu Arg Leu Arg Ala Gln Gly Ala Ala Ala Gly Val

10051909 Sequence Listing.txt

420

425

430

Ala Val Asn Arg Thr Thr Ser Ala Val Val Ser Met Thr Phe Leu Ser
 435 440 445
 Leu Thr Arg Ala Ile Thr Ile Gly Gly Ala Phe Phe Leu Tyr Cys Gly
 450 455 460
 Ile Ala Thr Val Gly Trp Ile Phe Phe Tyr Thr Val Leu Pro Glu Thr
 465 470 475 480
 Arg Gly Lys Thr Leu Glu Asp Met Glu Gly Ser Phe Gly Thr Phe Arg
 485 490 495
 Ser Lys Ser Asn Ala Ser Lys Ala Val Glu Asn Glu Asn Gly Gln Val
 500 505 510
 Ala Gln Val Gln Leu Gly Thr Asn Val Gln Thr
 515 520

<210> 25
 <211> 2089
 <212> DNA
 <213> Triticum aestivum

<400> 25
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 gggcaacgtg aggttcgcct tcgcctgcgc catcctcgcc tccatgacct ccatcctcct 180
 cggctacgac atcggcgtga tgagcggagc gtcgctgtac atccagaagg atctgaagat 240
 caacgacacc cagctggagg tcctcatggg catcctcaac gtgtactcgc tcatgggctc 300
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<210> 26

10051909 Sequence Listing.txt

<211> 539

<212> PRT

<213> Triticum aestivum

<400> 26

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Cys Ala Ile Leu Ala Ser Met Thr Ser Ile Leu Leu Gly Tyr Asp Ile
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Gly Val Met Ser Gly Ala Ser Leu Tyr Ile Gln Lys Asp Leu Lys Ile
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Asn Asp Thr Gln Leu Glu Val Leu Met Gly Ile Leu Asn Val Tyr Ser
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Leu Ile Gly Ser Phe Ala Ala Gly Arg Thr Ser Asp Trp Ile Gly Arg
100 105 110

Arg Phe Thr Ile Val Phe Ala Ala Val Ile Phe Phe Ala Gly Ala Leu
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Ile Met Gly Phe Ser Val Asn Tyr Ala Met Leu Met Phe Gly Arg Phe
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Val Ala Gly Ile Gly Val Gly Tyr Ala Leu Met Ile Ala Pro Val Asn
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Thr Gly Glu Val Ser Pro Ala Ser Ala Arg Gly Val Leu Thr Ser Phe
165 170 175

Pro Glu Val Phe Ile Asn Phe Gly Ile Leu Leu Gly Tyr Val Ser Asn
180 185 190

Phe Ala Phe Ala Arg Leu Ser Leu Arg Leu Gly Trp Arg Ile Met Leu
195 200 205

Gly Ile Gly Ala Val Pro Ser Val Leu Leu Ala Phe Met Val Leu Gly
210 215 220

Met Pro Glu Ser Pro Arg Trp Leu Val Met Lys Gly Arg Leu Ala Asp
225 230 235 240

Ala Lys Val Val Leu Ala Lys Thr Ser Asp Thr Pro Glu Glu Ala Ala
245 250 255

Glu Arg Ile Ala Asp Ile Lys Thr Ala Ala Gly Ile Pro Leu Gly Leu
260 265 270

Asp Gly Asp Val Val Pro Val Pro Lys Asn Lys Gly Ser Ser Glu Glu
275 280 285

Lys Arg Val Leu Lys Asp Leu Ile Leu Ser Pro Thr Ile Ala Met Arg
290 295 300

His Ile Leu Ile Ala Gly Ile Gly Ile His Phe Phe Gln Gln Ser Ser
Page 27

sequence evolution

305 310 315 320

Gly	Ile	Asp	Ala	Val 325	Val	Leu	Tyr	Ser	Pro 330	Leu	Val	Phe	Lys	Ser 335	Ala
Gly	Ile	Thr	Gly 340	Asp	Ser	Arg	Leu	Arg 345	Gly	Thr	Thr	Val	Ala 350	Val	Gly
Ala	Thr	Asn 355	Thr	Val	Phe	Ile	Leu 360	Val	Ala	Thr	Phe	Leu 365	Leu	Asp	Arg
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Ser 385	Leu	Val	Gly	Leu	Ala 390	Thr	Gly	Leu	Thr	Val 395	Ile	Ser	Arg	His	Pro 400
Asp	Glu	Lys	Ile	Thr 405	Trp	Ala	Ile	Val	Leu 410	Cys	Ile	Phe	Cys	Ile 415	Met
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Leu	Gly 450	Val	Ala	Val	Asn	Arg 455	Leu	Thr	Ser	Gly	Val 460	Ile	Ser	Met	Thr
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Asn	Thr	Ala 515	Thr	His	Lys	Gln	Gly 520	Ala	Ala	Glu	Ala	Asp 525	Asp	Asp	Ala
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10051909 Sequence Listing.txt

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 Leu Gly Ala Arg Thr Ser Asp Trp Val Gly Arg Arg Val Thr Val Val
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 Val Asn Tyr Ala Met Leu Met Val Gly Arg Phe Val Thr Gly Ile Gly
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 Asn Val Gly Ile Leu Leu Gly Tyr Val Ser Asn Tyr Ala Phe Ala Arg
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10051909 Sequence Listing.txt
200 205

195

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260 265 270
Val Met Pro Lys Thr Lys Gly Gly Gln Glu Lys Gln Val Trp Lys Glu
275 280 285
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Asn

10051909 Sequence Listing.txt

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 Val Ala Met Ser Leu Ile Gly₅₅ Ala Thr Leu Ile Thr Thr Cys Ser Gly
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 Gly Val Ala Asp Trp₇₀ Leu Gly Arg Arg Pro Met₇₅ Leu Ile Leu Ser Ser
 65 80
 Ile Leu Tyr Phe Val₈₅ Gly Ser Leu Val Met₉₀ Leu Trp Ser Pro Asn Val
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 Tyr Val Leu₁₀₀ Leu Gly Arg Leu₁₀₅ Asp Gly Phe Gly Val₁₁₀ Gly Leu
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 Val Val Thr Leu Val Pro Ile Tyr₁₂₀ Ile Ser Glu Thr Ala₁₂₅ Pro Pro Glu
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 Ile Arg Gly Leu Leu Asn Thr₁₃₅ Leu Pro Gln Phe Thr₁₄₀ Gly Ser Gly Gly
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 Met Phe Leu Ser Tyr Cys₁₅₀ Met Val Phe Gly Met₁₅₅ Ser Leu Met Pro Ser
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 Pro Ser Trp Arg₁₆₅ Leu Met Leu Gly Val₁₇₀ Leu Phe Ile Pro Ser Leu Val
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 Phe Phe Phe Leu₁₈₀ Thr Val Phe Phe Leu₁₈₅ Pro Glu Ser Pro Arg₁₉₀ Trp Leu
 195
 Val Ser Lys Gly Arg Met Leu Glu₂₀₀ Ala Lys Arg Val₂₀₅ Leu Gln Arg Leu
 210
 Arg Gly Arg Glu Asp Val₂₁₅ Ser Gly Glu Met Ala₂₂₀ Leu Leu Val Glu Gly
 225
 Leu Gly Ile Gly Gly Glu₂₃₀ Thr Thr Ile Glu Glu₂₃₅ Tyr Ile Ile Gly Pro
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 Ala Asp Glu Val₂₄₅ Thr Asp Asp His Asp₂₅₀ Ile Ala Val Asp Lys₂₅₅ Asp Gln
 260
 Ile Lys Leu Tyr Gly Ala Glu Glu Gly₂₆₅ Leu Ser Trp Val₂₇₀ Ala Arg Pro
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 Val Lys Gly Gly Ser Thr Met Ser₂₈₀ Val Leu Ser Arg His₂₈₅ Gly Ser Thr
 290
 Met Ser Arg Arg Gln Gly Ser Leu Ile Asp Pro Leu Val Thr Leu Phe

10051909 Sequence Listing.txt

290

295

300

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Arg His Glu Asp Trp Asp Glu Glu Asn Leu Val Gly Glu Gly Glu Asp
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Tyr Pro Ser Asp His Gly Asp Asp Ser Glu Asp Asp Leu His Ser Pro
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Leu Ile Ser Arg Gln Thr Thr Ser Met Glu Lys Asp Met Pro His Thr
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Ala Gln Gly Glu Gly Ala Gly Ser Met Gly Ile Gly Gly Gly Trp Gln
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Val Ala Trp Lys Trp Thr Glu Arg Glu Asp Glu Ser Gly Gln Lys Glu
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Glu Gly Phe Pro Gly Ser Arg Arg Gly Ser Ile Val Ser Leu Pro Gly
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465 470 475 480
Gly Pro Ala Met Val His Pro Ser Glu Thr Thr Lys Gly Ser Ile Trp
485 490 495
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Tyr Thr Pro Gln Ile Leu Glu Gln Ala Gly Val Gly Ile Leu Leu Ser
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565 570 575
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580 585 590
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595 600 605
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610 615 620
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Sequence Listing.txt																
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Lys	Gly	Met	Pro	Leu	Glu	Val	Ile	Thr	Glu	Phe	Phe	Ser	Val	Gly	Ala	
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<213>	Beta vulgaris

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10051909 Sequence Listing.txt

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Val	Leu	Asn	Arg	Ile
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Thr				
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Ser	Glu	Ile	Lys	Gln
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Thr				
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Asp	Ile	Tyr	Lys	Val
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Glu	Lys			
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Thr	Lys	Ile	Lys	Ser
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Lys	Glu	Leu	Phe	Phe
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Asn				
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Ile	Gly	Ile	Gly	Ile
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His				
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Pro	Thr	Pro	Ala	Val
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Ala	Arg	Lys	Gln	Leu
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Cys				
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Glu	Val	Phe	Pro	Leu
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Gly				
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Phe				
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Asp	Lys	Ser	Gln	Val
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10051909 Sequence Listing.txt

530

535

540

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aaaaaaaaa aaaaaaa 2777

<210> 32
<211> 800

10051909 Sequence Listing.txt

<212> PRT

<213> Zea mays

<400> 32

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Ile Arg Ser Gly Ser Trp Leu Ala Val Gln Thr Pro Phe Thr Pro Asp
 1          5          10          15
Leu Asp Arg Arg Glu Arg Leu Leu Pro Ser Val Val Leu Ala Leu Pro
          20          25          30
Gly Pro Leu Pro Pro Ala Ser Cys Ser Ser Gln Glu Pro Val Thr Ser
          35          40          45
Asp Asp Ile Leu Glu Asp Lys Met Ser Gly Ala Val Leu Val Ala Ile
          50          55          60
Val Ala Ser Ile Gly Asn Leu Leu Gln Gly Trp Asp Asn Ala Thr Ile
          65          70          75          80
Ala Ala Ala Val Leu Tyr Ile Lys Lys Glu Phe Gln Leu Gln Asn Glu
          85          90          95
Pro Thr Val Glu Gly Leu Ile Val Ser Met Ser Leu Ile Gly Ala Thr
          100          105          110
Ile Val Thr Thr Phe Ser Gly Pro Leu Ser Asp Ser Ile Gly Arg Arg
          115          120          125
Pro Met Leu Ile Leu Ser Ser Ile Leu Tyr Phe Phe Ser Gly Leu Ile
          130          135          140
Met Leu Trp Ser Pro Asn Val Tyr Val Leu Leu Leu Ala Arg Phe Val
          145          150          155          160
Asp Gly Phe Gly Ile Gly Leu Ala Val Thr Leu Val Pro Leu Tyr Ile
          165          170          175
Ser Glu Ile Ala Pro Ser Glu Ile Arg Gly Leu Leu Asn Thr Leu Pro
          180          185          190
Gln Phe Ser Gly Ser Gly Gly Met Phe Leu Ser Tyr Cys Met Val Phe
          195          200          205
Gly Met Ser Leu Ser Pro Ser Pro Asp Trp Arg Ile Met Leu Gly Val
          210          215          220
Leu Ala Ile Pro Ser Leu Phe Phe Phe Gly Leu Thr Ile Phe Tyr Leu
          225          230          235          240
Pro Glu Ser Pro Arg Trp Leu Val Ser Lys Gly Arg Met Ala Glu Ala
          245          250          255
Lys Lys Val Leu Gln Lys Leu Arg Gly Lys Asp Asp Val Ser Gly Glu
          260          265          270
Leu Ser Leu Leu Leu Glu Gly Leu Glu Val Gly Gly Asp Thr Ser Ile
          275          280          285
Glu Glu Tyr Ile Ile Gly Pro Ala Thr Glu Ala Ala Asp Asp Leu Val
          290          295          300
Thr Asp Gly Asp Lys Glu Gln Ile Thr Leu Tyr Gly Pro Glu Glu Gly
          305          310          315          320

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10051909 Sequence Listing.txt

Gln Ser Trp Ile Ala Arg Pro Ser Lys Gly Pro Ile Met Leu Gly Ser
325 330 335

Val Leu Ser Leu Ala Ser Arg His Gly Ser Met Val Asn Gln Ser Val
340 345 350

Pro Leu Met Asp Pro Ile Val Thr Leu Phe Gly Ser Val His Glu Asn
355 360 365

Met Pro Gln Ala Gly Gly Ser Met Arg Ser Thr Leu Phe Pro Asn Phe
370 375 380

Gly Ser Met Phe Ser Val Thr Asp Gln His Ala Lys Asn Glu Gln Trp
385 390 395 400

Asp Glu Glu Asn Leu His Arg Asp Asp Glu Glu Tyr Ala Ser Asp Gly
405 410 415

Ala Gly Gly Asp Tyr Glu Asp Asn Leu His Ser Pro Leu Leu Ser Arg
420 425 430

Gln Ala Thr Gly Ala Glu Gly Lys Asp Ile Val His His Gly His Arg
435 440 445

Gly Ser Ala Leu Ser Met Arg Arg Gln Thr Leu Leu Gly Glu Gly Gly
450 455 460

Asp Gly Val Ser Ser Thr Asp Ile Gly Gly Gly Trp Gln Leu Ala Trp
465 470 475 480

Lys Trp Ser Glu Lys Glu Gly Glu Asn Gly Arg Lys Glu Gly Gly Phe
485 490 495

Lys Arg Val Tyr Leu His Gln Glu Gly Val Pro Gly Ser Arg Arg Gly
500 505 510

Ser Ile Val Ser Leu Pro Gly Gly Gly Asp Val Phe Glu Gly Ser Glu
515 520 525

Phe Val His Ala Ala Ala Leu Val Ser Gln Ser Ala Leu Phe Ser Lys
530 535 540

Gly Leu Ala Glu Pro Arg Met Ser Asp Ala Ala Met Val His Pro Ser
545 550 555 560

Glu Val Ala Ala Lys Gly Ser Arg Trp Lys Asp Leu Phe Glu Pro Gly
565 570 575

Val Arg Arg Ala Leu Leu Val Gly Val Gly Ile Gln Ile Leu Gln Gln
580 585 590

Phe Ala Gly Ile Asn Gly Val Leu Tyr Tyr Thr Pro Gln Ile Leu Glu
595 600 605

Gln Ala Gly Val Ala Val Ile Leu Ser Lys Phe Gly Leu Ser Ser Ala
610 615 620

Ser Ala Ser Ile Leu Ile Ser Ser Leu Thr Thr Leu Leu Met Leu Pro
625 630 635 640

Cys Ile Gly Phe Ala Met Leu Leu Met Asp Leu Ser Gly Arg Arg Phe
645 650 655

10051909 Sequence Listing.txt

Leu Leu Leu Gly Thr Ile Pro Ile Leu Ile Ala Ser Leu Val Ile Leu
660 665 670

Val Val Ser Asn Leu Ile Asp Leu Gly Thr Leu Ala His Ala Leu Leu
675 680 685

Ser Thr Val Ser Val Ile Val Tyr Phe Cys Cys Phe Val Met Gly Phe
690 695 700

Gly Pro Ile Pro Asn Ile Leu Cys Ala Glu Ile Phe Pro Thr Arg Val
705 710 715 720

Arg Gly Leu Cys Ile Ala Ile Cys Ala Phe Thr Phe Trp Ile Gly Asp
725 730 735

Ile Ile Val Thr Tyr Ser Leu Pro Val Met Leu Asn Ala Ile Gly Leu
740 745 750

Ala Gly Val Phe Ser Ile Tyr Ala Val Val Cys Leu Ile Ser Phe Val
755 760 765

Phe Val Phe Leu Lys Val Pro Glu Thr Lys Gly Met Pro Leu Glu Val
770 775 780

Ile Thr Glu Phe Phe Ala Val Gly Ala Lys Gln Ala Ala Ala Lys Ala
785 790 795 800

<210> 33
<211> 2063
<212> DNA
<213> Zea mays

<400> 33

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cgctgcgtcg	caacgggcgg	cgggtgcgtc	gcttcgtgga	gcggcgatcg	gagattgccg	180
gcggtcaacc	cctgcagcgt	gcggatgccg	acgggcaacg	atgggtgggtg	cgccggcctg	240
aggctcgggg	cggcggatct	cgccggcctc	gagatggcca	acctgcgcgg	cggcgtcggg	300
gggctcttcc	gcgcgagccc	gcgctacggg	cgcttgcaag	ccacggcggc	agttgaccct	360
gaagatattc	cattggagaa	ggttcaagtt	aaatcctcag	gacatgttct	gccatatgtt	420
ggcgttgctt	gtttgggggc	tattctgttt	ggttaccatc	ttggtgtggt	caatggcgca	480
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gttagcacat	ccttggcttg	tgcaacacta	ggttctttta	ctgggggttc	tttggcagat	600
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gctgtagtgc	catccattct	gctggctgta	ggaatggcct	tttcgcctga	aagccctcgt	960
tggctattcc	agcaaggaaa	ggttactcaa	gcagaattag	ctgtaaaaag	actgtatgga	1020
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tccgaagccg	gctggtttga	tcttttcagc	aagcgttact	ggaaagtgtg	gagtgtgggg	1140
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tcgggtgttc	gtagtgcagg	cattgcatct	gatgttgctg	ctagtgtctc	tggtggagca	1260
gccaatgttt	ttggtactat	ggttgcatct	tctctaattg	acaaacaagg	aaggaaaagc	1320
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gtgctgtcat	ttgctctagg	agcgggccc	gttccagcgc	tacttcttcc	tgaaatattt	1500
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tttttcattg	gcctgtactt	cctgagtgct	gtgagcaagt	ttgggatcag	caacgtgtat	1620
ctgggatttg	catcagtatg	tgcccttgca	gttctgtaca	tagctgggaa	tgtggtcgag	1680

10051909 Sequence Listing.txt

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caagagtacc aatcttaggt gacttgggtg gggttgtgtc tgaaataagt gaattggatt 1920
gtagaatttc agaaataagt gaattggatt gtagaatttc aaaaagtgtg ttccccttaa 1980
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2040
aaaaaaaaa aaaaaaaaaa aaa                                     2063

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<210> 34
 <211> 571
 <212> PRT
 <213> Zea mays

<400> 34
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 Arg Arg Cys Arg Cys Gln His Gly Thr Ile Thr Thr Val Ile Lys Lys
 20 25 30
 Met Met Arg Cys Ala Ala Thr Gly Gly Gly Cys Val Ala Ser Trp Ser
 35 40 45
 Gly Asp Arg Arg Leu Pro Ala Val Asn Pro Cys Ser Val Arg Met Pro
 50 55 60
 Thr Gly Asn Asp Gly Trp Cys Ala Gly Leu Arg Ser Arg Ala Ala Asp
 65 70 75 80
 Leu Ala Gly Leu Glu Met Ala Asn Leu Arg Gly Gly Val Gly Gly Leu
 85 90 95
 Phe Arg Ala Ser Pro Arg Tyr Gly Arg Leu Gln Ala Thr Ala Ala Val
 100 105 110
 Asp Pro Glu Asp Ile Pro Leu Glu Lys Val Gln Val Lys Ser Ser Gly
 115 120 125
 His Val Leu Pro Tyr Val Gly Val Ala Cys Leu Gly Ala Ile Leu Phe
 130 135 140
 Gly Tyr His Leu Gly Val Val Asn Gly Ala Leu Glu Tyr Leu Ala Lys
 145 150 155 160
 Asp Leu Gly Ile Ala Glu Asn Ala Val Leu Gln Gly Trp Val Val Ser
 165 170 175
 Thr Ser Leu Ala Gly Ala Thr Leu Gly Ser Phe Thr Gly Gly Ser Leu
 180 185 190
 Ala Asp Lys Phe Gly Arg Thr Arg Thr Phe Ile Leu Asp Ala Val Pro
 195 200 205
 Leu Ala Leu Gly Ala Phe Leu Ser Ala Thr Ala Gln Asp Ile Arg Thr
 210 215 220
 Met Ile Ile Gly Arg Leu Leu Ala Gly Ile Gly Ile Gly Val Ser Ser
 225 230 235 240
 Ala Leu Val Pro Leu Tyr Ile Ser Glu Ile Ser Pro Thr Glu Ile Arg
 245 250 255

10051909 Sequence Listing.txt

Gly Thr Leu Gly Thr Val Asn Gln Leu Phe Ile Cys Ile Gly Ile Leu
260 265 270

Ala Ala Leu Leu Ala Gly Leu Pro Leu Ala Gly Asn Pro Ala Trp Trp
275 280 285

Arg Thr Met Phe Gly Ile Ala Val Val Pro Ser Ile Leu Leu Ala Val
290 295 300

Gly Met Ala Phe Ser Pro Glu Ser Pro Arg Trp Leu Phe Gln Gln Gly
305 310 315 320

Lys Val Thr Gln Ala Glu Leu Ala Val Lys Arg Leu Tyr Gly Lys Glu
325 330 335

Met Val Thr Glu Ile Met Phe Asp Leu Arg Ala Ser Gly Gln Ser Ser
340 345 350

Ser Glu Ser Glu Ala Gly Trp Phe Asp Leu Phe Ser Lys Arg Tyr Trp
355 360 365

Lys Val Val Ser Val Gly Ala Ala Leu Phe Leu Phe Gln Gln Leu Ala
370 375 380

Gly Ile Asn Ala Val Val Tyr Tyr Ser Thr Ser Val Phe Arg Ser Ala
385 390 395 400

Gly Ile Ala Ser Asp Val Ala Ala Ser Ala Leu Val Gly Ala Ala Asn
405 410 415

Val Phe Gly Thr Met Val Ala Ser Ser Leu Met Asp Lys Gln Gly Arg
420 425 430

Lys Ser Leu Leu Ile Thr Ser Phe Ser Gly Met Gly Ala Ser Met Leu
435 440 445

Leu Leu Ala Leu Ser Phe Thr Trp Lys Ala Leu Ala Pro Tyr Ser Gly
450 455 460

Thr Leu Ala Val Val Gly Thr Val Leu Tyr Val Leu Ser Phe Ala Leu
465 470 475 480

Gly Ala Gly Pro Val Pro Ala Leu Leu Leu Pro Glu Ile Phe Ala Ser
485 490 495

Arg Ile Arg Ala Lys Ala Val Ala Leu Ser Leu Gly Met His Trp Val
500 505 510

Ser Asn Phe Phe Ile Gly Leu Tyr Phe Leu Ser Val Val Ser Lys Phe
515 520 525

Gly Ile Ser Asn Val Tyr Leu Gly Phe Ala Ser Val Cys Ala Leu Ala
530 535 540

Val Leu Tyr Ile Ala Gly Asn Val Val Glu Thr Lys Gly Arg Ser Leu
545 550 555 560

Glu Glu Ile Glu Arg Glu Leu Ser Val Ala Glu
565 570

<210> 35
<211> 1953

10051909 Sequence Listing.txt

<212> DNA

<213> Zea mays

<220>

<221> unsure

<222> (1584)

<223> n = A, C, G or T

<400> 35

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ggagctaaaa gtgaataaaa tagcaaaaga atatctttta gtcactttta gcttctaaag 1800
aggagctaga atttagtccc ttgttttagc ttatactcct tccatcctaa aaaaatatag 1860
gtctttctaa cttttctttt ttctgttcat attcattcga ataatagata atatagacat 1920
acgtataaac tattcattaa aaaaaaaaaa aaa 1953

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<210> 36

<211> 553

<212> PRT

<213> Zea mays

<220>

<221> UNSURE

<222> (528)

<223> Xaa = any amino acid

<400> 36

Pro Ser Ser Ser Ser Ser Phe Arg Pro Ala Gly Lys Lys Lys Lys Lys
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Lys Asn Gln Gly Leu Arg Arg Glu Ala Val Pro Gly Arg Pro Ala Ser
20 25 30

Glu Leu Arg Thr Arg Val Met Gly Gly Gly Ser Asn Arg Gly Gly Ala
35 40 45

10051909 Sequence Listing.txt

Gly Ala Gly Glu Glu Ser Gly Ser Asp His Asp Gly Val Leu Arg Arg
50 55 60

Pro Leu Leu Asn Thr Gly Ser Trp Tyr Arg Met Ser Ser Arg Gln Ser
65 70 75 80

Ser Phe Ala Pro Gly Thr Ser Ser Met Ala Val Leu Arg Glu Ser His
85 90 95

Val Ser Ala Phe Leu Cys Thr Leu Ile Val Ala Leu Gly Pro Ile Gln
100 105 110

Phe Gly Phe Thr Ser Gly Phe Ser Ser Pro Thr Gln Asp Ala Met Val
115 120 125

Arg Asp Leu Asn Leu Ser Ile Ser Glu Phe Ser Ala Phe Gly Ser Leu
130 135 140

Ser Asn Val Gly Gly Met Val Gly Ala Ile Ala Ser Gly Gln Met Ala
145 150 155 160

Glu Tyr Ile Gly Arg Lys Gly Ser Leu Met Ile Ala Ala Ile Pro Asn
165 170 175

Ile Ile Gly Trp Leu Ala Ile Ser Phe Ala Lys Asp Ala Ser Phe Leu
180 185 190

Tyr Met Gly Arg Leu Leu Glu Gly Phe Gly Val Gly Ile Ile Ser Tyr
195 200 205

Thr Val Pro Val Tyr Ile Ala Glu Ile Ser Pro Gln Asn Met Arg Gly
210 215 220

Ala Leu Gly Ser Val Asn Gln Leu Ser Val Thr Phe Gly Ile Phe Leu
225 230 235 240

Ala Tyr Leu Leu Gly Met Phe Ile Pro Trp Arg Leu Leu Ala Val Ile
245 250 255

Gly Ala Leu Pro Cys Thr Met Leu Ile Pro Gly Leu Phe Phe Ile Pro
260 265 270

Glu Ser Pro Arg Trp Leu Ala Lys Met Asn Leu Thr Glu Asp Cys Glu
275 280 285

Thr Ser Leu Gln Val Leu Arg Gly Phe Glu Thr Asp Ile Thr Thr Glu
290 295 300

Val Asn Asp Ile Lys Arg Ala Val Ala Ser Ser Ser Lys Arg Thr Thr
305 310 315 320

Ile Ser Phe Gln Glu Leu Asn Gln Lys Lys Tyr Arg Thr Pro Leu Leu
325 330 335

Leu Gly Ile Gly Leu Leu Val Leu Gln Asn Leu Ser Gly Ile Asn Gly
340 345 350

Val Leu Phe Tyr Ala Ser Ser Ile Phe Lys Ala Ala Gly Val Thr Asn
355 360 365

Ser Asp Leu Ala Thr Cys Ser Leu Gly Ala Ile Gln Val Leu Ala Thr
370 375 380

10051909 Sequence Listing.txt

Gly Val Thr Thr Trp Leu Leu Asp Arg Ala Gly Arg Arg Ile Leu Leu
 385 390 395 400
 Ile Ile Ser Thr Ser Gly Met Thr Leu Cys Leu Leu Ala Val Ser Val
 405 410 415
 Val Phe Phe Leu Lys Asp Asn Ile Ser Gln Asp Ser Asn Ser Tyr Tyr
 420 425 430
 Ile Leu Thr Met Ile Ser Leu Val Gly Ile Val Ser Phe Val Ile Thr
 435 440 445
 Phe Ser Phe Gly Met Gly Ala Ile Pro Trp Leu Met Met Ser Glu Ile
 450 455 460
 Leu Pro Val Ser Ile Lys Ser Leu Gly Gly Ser Ile Ala Thr Leu Ala
 465 470 475 480
 Asn Trp Leu Thr Ser Phe Ala Ile Thr Met Thr Thr Asn Leu Met Leu
 485 490 495
 Thr Trp Ser Val Gly Gly Thr Phe Leu Ser Tyr Met Val Val Ser Ala
 500 505 510
 Phe Thr Ile Val Phe Val Val Leu Trp Val Pro Glu Thr Lys Gly Xaa
 515 520 525
 Asn Ser Arg Gly Asp Thr Ile Phe Val Ser Leu Ser Ile Gln Arg Gln
 530 535 540
 Leu Gln Trp Leu Pro Glu Cys Leu Ser
 545 550

<210> 37
 <211> 740
 <212> PRT
 <213> Oryza sativa

<400> 37
 Met Ala Gly Ala Val Leu Val Ala Ile Ala Ala Ser Ile Gly Asn Leu
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 20 25 30
 Lys Lys Glu Phe Asn Leu Gln Ser Glu Pro Leu Ile Glu Gly Leu Ile
 35 40 45
 Val Ala Met Ser Leu Ile Gly Ala Thr Ile Ile Thr Thr Phe Ser Gly
 50 55 60
 Ala Val Ala Asp Ser Phe Gly Arg Arg Pro Met Leu Ile Ala Ser Ala
 65 70 75 80
 Val Leu Tyr Phe Val Ser Gly Leu Val Met Leu Trp Ala Pro Asn Val
 85 90 95
 Tyr Val Leu Leu Leu Ala Arg Leu Ile Asp Gly Phe Gly Ile Gly Leu
 100 105 110
 Ala Val Thr Leu Val Pro Leu Tyr Ile Ser Glu Thr Ala Pro Thr Asp

10051909 Sequence Listing.txt
120 125

115
Ile Arg Gly Leu Leu Asn Thr Leu Pro Gln Phe Ser Gly Ser Gly Gly
130 135 140
Met Phe Leu Ser Tyr Cys Met Val Phe Gly Met Ser Leu Met Pro Gln
145 150 155 160
Pro Asp Trp Arg Ile Met Leu Gly Val Leu Ser Ile Pro Ser Leu Ile
165 170 175
Tyr Phe Ala Leu Thr Ile Phe Tyr Leu Pro Glu Ser Pro Arg Trp Leu
180 185 190
Val Ser Lys Gly Arg Met Ala Glu Ala Lys Arg Val Leu Gln Gly Leu
195 200 205
Arg Gly Arg Glu Asp Val Ser Gly Glu Met Ala Leu Leu Val Glu Gly
210 215 220
Leu Gly Val Gly Lys Asp Thr Lys Ile Glu Glu Tyr Ile Ile Gly Pro
225 230 235 240
Asp Asp Glu Leu Ala Asp Glu Gly Leu Ala Pro Asp Pro Glu Lys Ile
245 250 255
Lys Leu Tyr Gly Pro Glu Glu Gly Leu Ser Trp Val Ala Arg Pro Val
260 265 270
His Gly Gln Ser Ala Leu Gly Ser Ala Leu Gly Leu Ile Ser Arg His
275 280 285
Gly Ser Met Val Ser Gln Gly Lys Pro Leu Val Asp Pro Val Val Thr
290 295 300
Leu Phe Gly Ser Val His Glu Lys Met Pro Glu Ile Met Gly Ser Met
305 310 315 320
Arg Ser Thr Leu Phe Pro Asn Phe Gly Ser Met Phe Ser Val Ala Glu
325 330 335
Gln Gln Gln Ala Lys Gly Asp Trp Asp Ala Glu Ser Gln Arg Glu Gly
340 345 350
Glu Asp Tyr Gly Ser Asp His Gly Gly Asp Asp Ile Glu Asp Ser Leu
355 360 365
Gln Ser Pro Leu Ile Ser Arg Gln Ala Thr Ser Val Glu Gly Lys Glu
370 375 380
Ile Ala Ala Pro His Gly Ser Ile Met Gly Ala Val Gly Arg Ser Ser
385 390 395 400
Ser Leu Met Gln Gly Gly Glu Ala Val Ser Ser Met Gly Ile Gly Gly
405 410 415
Gly Trp Gln Leu Ala Trp Lys Trp Thr Glu Arg Glu Gly Ala Asp Gly
420 425 430
Glu Lys Glu Gly Gly Phe Gln Arg Ile Tyr Leu His Glu Glu Gly Val
435 440 445
Thr Gly Asp Arg Arg Gly Ser Ile Leu Ser Leu Pro Gly Gly Asp Val

10051909 Sequence Listing.txt

450

455

460

Pro 465 Pro Gly Gly Glu Phe 470 Val Gln Ala Ala Ala 475 Leu Val Ser Gln Pro 480
 Ala Leu Tyr Ser Lys 485 Glu Leu Met Glu Gln 490 Arg Leu Ala Gly Pro 495
 Met Val His Pro 500 Ser Gln Ala Val Ala 505 Lys Gly Pro Lys Trp 510 Ala Asp
 Leu Phe Glu 515 Pro Gly Val Lys His 520 Ala Leu Phe Val Gly 525 Ile Gly Ile
 Gln Ile 530 Leu Gln Gln Phe Ala 535 Gly Ile Asn Gly Val 540 Leu Tyr Tyr Thr
 Pro 545 Gln Ile Leu Glu Gln Ala 550 Gly Val Gly Val 555 Leu Leu Ala Asn Ile 560
 Gly Leu Ser Ser Ser 565 Ser Ala Ser Ile Leu 570 Ile Ser Gly Leu Thr 575 Thr
 Leu Leu Met Leu 580 Pro Ser Ile Gly Ile Ala 585 Met Arg Leu Met 590 Asp Met
 Ser Gly Arg 595 Arg Phe Leu Leu Leu 600 Ala Thr Ile Pro Ile 605 Leu Ile Val
 Ala Leu 610 Ala Ile Leu Ile Leu 615 Val Asn Ile Leu Asp 620 Val Gly Thr Met
 Val 625 His Ala Ser Leu Ser 630 Thr Val Ser Val Ile 635 Leu Tyr Phe Cys Phe 640
 Phe Val Met Gly Phe 645 Gly Pro Ile Pro Asn 650 Ile Leu Cys Ala Glu 655 Ile
 Phe Pro Thr Thr 660 Val Arg Gly Ile Cys 665 Ile Ala Ile Cys Ala 670 Leu Thr
 Phe Trp Ile 675 Gly Asp Ile Ile Val 680 Thr Tyr Thr Leu Pro 685 Val Met Leu
 Asn Ala 690 Ile Gly Leu Ala Gly 695 Val Phe Gly Ile Tyr 700 Ala Val Val Cys
 Ile 705 Leu Ala Phe Leu Phe 710 Val Phe Met Lys Val 715 Pro Glu Thr Lys Gly 720
 Met Pro Leu Glu Val 725 Ile Thr Glu Phe Phe 730 Ser Val Gly Ala Lys 735 Gln
 Ala Lys Glu Asp 740

<210> 38

<211> 501

<212> PRT

<213> Oryza sativa

<400> 38

10051909 Sequence Listing.txt

Met Ser Phe Arg Gly Glu Glu Ser Gly Gly Glu Asp Gly Gly Arg Thr
1 5 10 15
Ala Ser Ala Ser Asp Leu Arg Lys Pro Phe Leu His Thr Gly Ser Trp
20 25 30
Tyr Lys Met Ser Ser Ala Gly Gly Gly Gly Met Gly Ser Arg Leu
35 40 45
Gly Ser Ser Ala Tyr Ser Leu Arg Asp Ser Ser Val Ser Ala Val Leu
50 55 60
Cys Thr Leu Ile Val Ala Leu Gly Pro Ile Gln Phe Gly Phe Thr Cys
65 70 75 80
Gly Phe Ser Ser Pro Thr Gln Asp Ala Ile Ile Ser Asp Leu Gly Leu
85 90 95
Thr Leu Ser Glu Phe Ser Leu Phe Gly Ser Leu Ser Asn Val Gly Ala
100 105 110
Met Val Gly Ala Ile Ala Ser Gly Gln Ile Ala Glu Tyr Ile Gly Arg
115 120 125
Lys Gly Ser Leu Met Ile Ala Ala Ile Pro Asn Ile Ile Gly Trp Leu
130 135 140
Ala Ile Ser Phe Ala Lys Asp Ser Ser Phe Leu Phe Met Gly Arg Leu
145 150 155 160
Leu Glu Gly Phe Gly Val Gly Val Ile Ser Tyr Val Val Pro Val Tyr
165 170 175
Ile Ala Glu Ile Ala Pro Gln Thr Met Arg Gly Ala Leu Gly Ser Val
180 185 190
Asn Gln Leu Ser Val Thr Ile Gly Ile Leu Leu Ala Tyr Leu Leu Gly
195 200 205
Met Phe Val Pro Trp Arg Ile Leu Ser Val Leu Gly Ile Leu Pro Cys
210 215 220
Ser Ile Leu Ile Pro Gly Leu Phe Phe Ile Pro Glu Ser Pro Arg Trp
225 230 235 240
Leu Ala Lys Met Gly Lys Met Glu Asp Phe Glu Ser Ser Leu Gln Val
245 250 255
Leu Arg Gly Phe Glu Thr Asp Ile Ala Val Glu Val Asn Glu Ile Lys
260 265 270
Arg Ser Val Gln Ser Ser Arg Arg Arg Thr Thr Ile Arg Phe Ala Asp
275 280 285
Ile Lys Gln Lys Arg Tyr Ser Val Pro Leu Met Val Gly Ile Gly Leu
290 295 300
Leu Val Leu Gln Gln Leu Ser Gly Val Asn Gly Ile Leu Phe Tyr Ala
305 310 315 320
Ala Ser Ile Phe Lys Ala Ala Gly Leu Thr Asn Ser Asn Leu Ala Thr
325 330 335

10051909 Sequence Listing.txt

Phe Gly Leu Gly Val Val Gln Val Val Ala Thr Gly Val Thr Thr Trp
340 345 350
Leu Thr Asp Lys Ala Gly Arg Arg Leu Leu Leu Ile Ile Ser Thr Thr
355 360 365
Gly Met Thr Ile Thr Leu Val Val Val Ser Val Ser Phe Phe Val Lys
370 375 380
Asp Asn Ile Thr Asn Gly Ser His Leu Tyr Ser Val Met Ser Met Leu
385 390 395 400
Ser Leu Val Gly Leu Val Ala Phe Val Ile Ser Phe Ser Leu Gly Leu
405 410 415
Gly Ala Ile Pro Trp Ile Ile Met Ser Glu Ile Leu Pro Val Asn Ile
420 425 430
Lys Ser Leu Ala Gly Ser Val Ala Thr Leu Ala Asn Trp Leu Thr Ala
435 440 445
Trp Leu Ile Thr Met Thr Ala Ser Leu Met Leu Ser Trp Ser Asn Gly
450 455 460
Gly Thr Phe Ala Ile Tyr Ala Ala Val Cys Ala Gly Thr Leu Val Phe
465 470 475 480
Val Cys Leu Trp Val Pro Glu Thr Lys Gly Arg Thr Leu Glu Glu Ile
485 490 495
Ala Phe Ser Phe Arg
500

<210> 39
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Conserved sequence element disclosed in the sequence alignment of
Figure 2.

<400> 39

Pro Glu Ser Pro Arg Trp Leu
1 5

<210> 40
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Conserved sequence element disclosed in the sequence alignment of
Figure 2.

<220>
<221> misc_feature
<222> (4)..(4)
<223> Xaa = any amino acid

10051909 Sequence Listing.txt

<400> 40

Pro Glu Thr Xaa Gly
1 5

<210> 41

<211> 12

<212> PRT

<213> Artificial

<220>

<223> Conserved sequence element disclosed in the sequence alignment of Figure 2.

<220>

<221> misc_feature

<222> (5)..(5)

<223> Xaa = any amino acid

<400> 41

Leu Gly Tyr Asp Xaa Ile Gly Val Met Ser Gly Ala
1 5 10

<210> 42

<211> 10

<212> PRT

<213> Artificial

<220>

<223> Conserved sequence element disclosed in the sequence alignment of Figure 2.

<220>

<221> misc_feature

<222> (3)..(5)

<223> Xaa = any amino acid

<220>

<221> misc_feature

<222> (7)..(7)

<223> Xaa = any amino acid

<400> 42

Gly Arg Xaa Xaa Xaa Gly Xaa Gly Val Gly
1 5 10

<210> 43

<211> 6

<212> PRT

<213> Artificial

<220>

<223> Conserved sequence element disclosed in the sequence alignment of Figure 2.

<400> 43

10051909 Sequence Listing.txt

Gly Ile His Phe Phe Gln
1 5

<210> 44
<211> 6
<212> PRT
<213> Artificial

<220>
<223> Conserved sequence element disclosed in the sequence alignment of Figure 2.

<220>
<221> misc_feature
<222> (3)..(3)
<223> Xaa = any amino acid

<220>
<221> misc_feature
<222> (5)..(5)
<223> Xaa = any amino acid

<400> 44

Phe Ser Xaa Gly Xaa Gly
1 5

<210> 45
<211> 18
<212> PRT
<213> Artificial

<220>
<223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
<221> misc_feature
<222> (5)..(5)
<223> Xaa = any amino acid

<220>
<221> misc_feature
<222> (8)..(8)
<223> Xaa = any amino acid

<220>
<221> misc_feature
<222> (14)..(14)
<223> Xaa = any amino acid

<400> 45

Asp Gly Phe Gly Xaa Gly Leu Xaa Val Thr Leu Val Pro Xaa Tyr Ile
1 5 10 15

Ser Glu

10051909 Sequence Listing.txt

<210> 46
 <211> 25
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
 <221> misc_feature
 <222> (7)..(7)
 <223> Xaa = any amino acid

<220>
 <221> misc_feature
 <222> (9)..(10)
 <223> Xaa = any amino acid

<400> 46

Asn	Thr	Leu	Pro	Gln	Phe	Xaa	Gly	Xaa	Xaa	Gly	Gly	Met	Phe	Leu	Ser
1				5					10					15	

Tyr	Cys	Met	Val	Phe	Gly	Met	Ser	Leu
			20					25

<210> 47
 <211> 10
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
 <221> misc_feature
 <222> (6)..(6)
 <223> Xaa = any amino acid

<400> 47

Met	Leu	Gly	Val	Leu	Xaa	Ile	Pro	Ser	Leu
1				5					10

<210> 48
 <211> 13
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

10051909 Sequence Listing.txt

<220>
 <221> misc_feature
 <222> (10)..(10)
 <223> Xaa = any amino acid

<400> 48

Arg Trp Leu Val Ser Lys Gly Arg Met Xaa Glu Ala Lys
 1 5 10

<210> 49
 <211> 6
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<400> 49

Glu Tyr Ile Ile Gly Pro
 1 5

<210> 50
 <211> 12
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
 <221> misc_feature
 <222> (3)..(3)
 <223> Xaa = any amino acid

<220>
 <221> misc_feature
 <222> (10)..(10)
 <223> Xaa = any amino acid

<400> 50

Asp Pro Xaa Val Thr Leu Phe Gly Ser Xaa His Glu
 1 5 10

<210> 51
 <211> 16
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>

10051909 Sequence Listing.txt

<221> misc_feature
<222> (6)..(6)
<223> Xaa = any amino acid

<220>
<221> misc_feature
<222> (10)..(10)
<223> Xaa = any amino acid

<400> 51

Gly Ser Met Arg Ser Xaa Leu Phe Pro Xaa Phe Gly Ser Met Phe Ser
1 5 10 15

<210> 52
<211> 11
<212> PRT
<213> Artificial

<220>
<223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
<221> misc_feature
<222> (7)..(7)
<223> Xaa = any amino acid

<400> 52

Ile Gly Gly Gly Trp Gln Xaa Ala Trp Lys Trp
1 5 10

<210> 53
<211> 23
<212> PRT
<213> Artificial

<220>
<223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
<221> misc_feature
<222> (5)..(5)
<223> Xaa = any amino acid

<220>
<221> misc_feature
<222> (20)..(20)
<223> Xaa = any amino acid

<400> 53

Leu Gln Gln Phe Xaa Gly Ile Asn Gly Val Leu Tyr Tyr Thr Pro Gln
1 5 10 15

Ile Leu Glu Xaa Ala Gly Val

<210> 54
 <211> 19
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
 <221> misc_feature
 <222> (4)..(4)
 <223> Xaa = any amino acid

<220>
 <221> misc_feature
 <222> (9)..(9)
 <223> Xaa = any amino acid

<220>
 <221> misc_feature
 <222> (13)..(13)
 <223> Xaa = any amino acid

<220>
 <221> misc_feature
 <222> (17)..(17)
 <223> Xaa = any amino acid

<400> 54

Leu Met Asp Xaa Ser Gly Arg Arg Xaa Leu Leu Leu Xaa Thr Ile Pro
 1 5 10 15

Xaa Leu Ile

<210> 55
 <211> 34
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
 <221> misc_feature
 <222> (4)..(4)
 <223> Xaa = any amino acid

<220>
 <221> misc_feature
 <222> (12)..(12)
 <223> Xaa = any amino acid

10051909 Sequence Listing.txt

<220>
 <221> misc_feature
 <222> (18)..(18)
 <223> Xaa = any amino acid

<220>
 <221> misc_feature
 <222> (24)..(24)
 <223> Xaa = any amino acid

<400> 55

Tyr Phe Cys Xaa Phe Val Met Gly Phe Gly Pro Xaa Pro Asn Ile Leu
 1 5 10 15

Cys Xaa Glu Ile Phe Pro Thr Xaa Val Arg Gly Leu Cys Ile Ala Ile
 20 25 30

Cys Ala

<210> 56
 <211> 17
 <212> PRT
 <213> Artificial

<220>
 <223> Conserved sequence element disclosed in the sequence alignment of Figure 1.

<220>
 <221> misc_feature
 <222> (14)..(14)
 <223> Xaa = any amino acid

<400> 56

Lys Val Pro Glu Thr Lys Gly Met Pro Leu Glu Val Ile Xaa Glu Phe
 1 5 10 15

Phe